

GEANIE MEASUREMENTS OF NEUTRON-INDUCED PARTIAL γ -RAY CROSS SECTIONS FOR NUCLEAR DATA

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A wide variety of partial γ -ray cross sections produced in neutron-induced reactions in the energy range $1 < E_n < 200$ MeV have been measured over the past eight years. Reaction channel cross sections were deduced from these measurements with the aid of nuclear modeling. Enabling facilities are the intense “white” source of neutrons at the LANSCE/WNR 60R 20-meter flight path, and the precision γ -ray spectrometry of the Compton-suppressed Ge detector array GEANIE. Partial γ -ray cross sections are measured as a function of incident neutron energy using the time-of-flight technique. The first focus of the measurements was on the $^{239}\text{Pu}(n,2n)$ cross section. This very successful experiment has been followed by a series of other experiments on nuclei throughout the periodic table. Representative measurements will be presented, along with the techniques we used. We will also present experiments in progress, as well as future plans.

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